

Amendment Under 37 C.F.R. § 1.116
USSN 09/719,807
PCT/IE99/00053
Attorney Docket Q62334
September 18, 2003

REMARKS

Claims 61-80 are all the claims pending in the application.

In the Final Rejection of March 19, 2003 only three claims were specifically rejected. Claims 61 and 62 were rejected under 35 U.S.C. § 103(a) as being anticipated by Paoli (5,228,049) and Claim 69 was rejected under 35 U.S.C. § 112, first paragraph. There was no official rejection of any kind with respect to Claims 63-68 and 70-80. The claims which were not officially rejected were the subject of a discussion in the Final Rejection but in view of the fact that they were not officially acted on it is submitted that the Final Rejection is totally improper. Therefore it is respectfully requested that the finality of the Final Rejection be withdrawn and the present Amendment be entered and fully considered in view of the following remarks.

To overcome the Examiner's objections raised in the official letter of March 19, 2003, the Applicant has corrected a clerical error in Claims 61 and 75, which may have led to confusion as to the scope of the two claims.

The second last line of Claim 61 has been corrected to make it clear that the secondary contacts and the main contact together form "the actual contact area", and not as was erroneously claimed in Claim 61, "the actual contact areas". A similar correction has been made to Claim 75 in the second last line of the claim.

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Accordingly, it is respectfully submitted that Claim 61 now clearly differentiates the invention from the prior art, and in particular, from the disclosure of Paoli in U.S. Patent Specification No. 5,228,049.

Claim 61 claims a semiconductor device which comprises, inter alia, a semiconductor medium, and first and second electrical contacts located spaced apart from each other by at least the semiconductor medium, and in electrical contact with the semiconductor medium. The first electrical contact comprises the following essential features:

- (a) a main elongated electrical contact extending substantially longitudinally relative to the active region, and
- (b) a plurality of spaced apart elongated secondary electrical contacts.

However, there are important relationships between the secondary electrical contacts and the main electrical contact, which it is respectfully submitted may have been overlooked by the Examiner. The secondary electrical contacts must be:

- (c) electrically connected to the main electrical contact, and
- (d) extend from the main electrical contact in a direction generally transversely of the active region.

Furthermore, the secondary electrical contacts and the main electrical contact together should:

- (e) form the actual contact area, and
- (f) should co-operate (with each other) for defining the non-contact areas.

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It is respectfully submitted that Paoli fails to disclose a semiconductor device with all the above features (a) to (f). In particular, it is respectfully submitted that Paoli fails to disclose features (c), (d) and (e).

Furthermore, it is respectfully submitted that not only does Paoli fail to disclose features (c), (d) and (e), but there is absolutely no suggestion whatsoever of the possibility of such features being provided in any of the devices of Paoli.

For the purpose of clarification, and to avoid any misunderstanding of Claim 61, it is respectfully submitted that from a combination of features (a) and (d) the secondary

electrical contacts of the invention must extend in a direction generally transversely of the main electrical contacts, since from feature (a) the main electrical contact is to extend substantially longitudinally relative to the active region, and from feature (d) the secondary electrical contacts are to extend in a direction generally transversely of the active region. Thus, if the main contact extends longitudinally and the secondary contacts extend transversely of the active region, then the main and secondary contacts must extend transversely relative to each other.

The Applicant notes that the Examiner is interpreting some aspect of Paoli as disclosing feature (d), namely, the feature of the secondary electrical contacts extending in a direction generally transversely of the active region. It is respectfully submitted that Paoli fails to disclose or suggest this feature. The Applicant has carefully considered the disclosure of Paoli and can find no disclosure or the remotest suggestion of this feature. In the two pattern contact areas

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disclosed by Paoli in Fig. 3B and 3C, it is respectfully submitted that there is absolutely no disclosure or suggestion of feature (d).

In the electrical contact pattern of Fig. 3B, the electrical contacts are formed by a plurality of open dots of varying size and density. This, it is respectfully submitted, could not under any circumstances be considered to be a disclosure or suggestion of feature (d) whereby secondary electrical contacts are to extend from a main contact in a direction generally transversely of the active region, in other words, generally transversely of the main contact. Firstly, under no circumstances could it be considered that the dots are elongated main or indeed secondary electrical contacts, and secondly, as stated by Paoli himself at column 5, line 17, the dots are "open dots".

It is respectfully submitted that the contact pattern disclosed in Fig. 3C of Paoli could likewise not be considered to be a disclosure or suggestion of feature (d). It is respectfully submitted that the electrical contacts disclosed by the pattern of Fig. 3C all extend in a substantially longitudinal direction relative to the active region. It is respectfully submitted that by no stretch of the imagination could the electrical contacts of Fig. 3C be considered as defining a main electrical contact which extends substantially longitudinally relative to an active region, and a plurality of elongated secondary electrical contacts extending from the main electrical contact in a direction generally transversely of the active region. It is respectfully submitted that the electrical contacts of Paoli in Fig. 3C extend in a general longitudinal direction with a slight outward fanning effect.

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The Applicant notes that the Examiner appears to be taking the view that the area 30' of Paoli could be considered as a substantially longitudinally extending main electrical contact, and that electrical contacts 28 of Paoli could be considered to be spaced apart elongated secondary electrical contacts extending transversely of the main electrical contact 30'. The Applicant cannot under any circumstances understand how the Examiner can arrive at this conclusion. From Fig. 2 the electrical contacts 30' appear to be on respective opposite sides of the amplifier region, and there are no transversely extending secondary electrical contacts 28. The layer 28 as stated by Paoli is a cap layer 28, and even if it were electrically conductive, there is clearly no suggestion, nor is there any indication in Paoli that the cap layer 28 could, in conjunction with or otherwise, form a plurality of secondary electrical contacts extending transversely of the main electrical contact and electrically connected thereto.

Furthermore, not only does Paoli fail to disclose feature (d), but it is respectfully submitted that Paoli fails to disclose features (c) and (e). Regarding feature (c), namely, the requirement that the secondary contacts be electrically connected to the main contact, in Fig. 3B of Paoli the contacts are "open dots", in other words, not electrically connected. In Fig. 3C of Paoli it is respectfully submitted that the electrical contacts are either all spaced apart from each other, and therefore, not electrically connected to each other, or only three of the electrical contacts of Paoli are electrically connected. If one were to consider the white regions of the pattern to be the electrical contacts, then none of the electrical contacts are electrically connected to each other. On the other hand, if one were to consider the black regions to be the electrical

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contacts, all with the exception of the three middle contact are spaced apart from each other, and thus not electrically connected to each other. Indeed, it is respectfully submitted that Paoli makes no disclosure or suggestion of the possibility of the contacts of Fig. 3C being electrically connected.

Since in both Figs. 3B and 3C the contacts of the patterns of Paoli are not electrically connected to each other, it is respectfully submitted that Paoli also fails to disclose or suggest feature (e), namely, the requirement that the main and secondary electrical contacts form an actual contact area, in other words, one contact area. In Paoli the contacts of the patterns of Figs. 3B and 3C form a plurality of contact areas.

One of the many advantages of the invention is achieved by the fact that the secondary electrical contacts are electrically connected to the main electrical contact. Since the secondary contacts must be electrically connected to the main contact, all that is required to

make an external electrical connection with the first electrical contact, is one single electrical connection. By making one single electrical connection to either the main electrical contact, or to one of the secondary electrical contacts, the main and secondary electrical contacts can be connected to an external source. This is in contrast to the arrangement of Paoli whereby separate electrical connections would be required to each of the open dots of Fig. 3B, and similarly, separate electrical connections would be required to the electrical contacts of Fig. 3C.

Turning now to the objection to Claim 69 under 35 USC 112, it is respectfully submitted that the subject matter of Claim 69 is clearly described in the specification in such a way as to

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reasonably convey to one skilled in the relevant art that the inventors at the time the application was filed, had possession of the claimed invention. The Examiner is

respectfully referred to the specification at page 11, lines 19 to 23, where the specification clearly teaches that by varying the ratio of the actual contact area to the non-contact area, a grating effect can be obtained. When this passage is read in conjunction with the passages at page 11, lines 5 to 17 and page 9, line 29 to page 10, line 2, it is respectfully submitted that it is clear that the inventors had possession of the invention claimed in Claim 69 when the Application was filed.

In view of the above, and the correction which has been made to Claim 61, it is respectfully submitted that the invention as claimed in Claim 61 is novel and not obvious whether Paoli is considered separately or combined with other prior art documents, and accordingly, should be allowable, and allowance is respectfully requested.

Since Claims 62 to 74 are either directly or indirectly dependent on Claim 61, it is respectfully submitted that once the Examiner is satisfied of the allowability of Claim 61, Claims 62 to 74 should likewise be allowable, and allowance is respectfully requested.

Claim 75 is directed towards a method for spatially varying the current density in an active region of a junction defined by a semiconductor medium of a semiconductor device which includes method steps which are substantially similar to the features claimed in Claim 61. Additionally, Claim 75 has been corrected in similar fashion as Claim 61 to make it clear that the secondary contacts and the main contact together form "the actual contact area" rather than "the

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actual contact areas". In view of this, and the similarity of the features claimed in Claim 75 to those of the features claimed in Claim 61, it is respectfully submitted that once the Examiner is satisfied of the allowability of Claim 61, Claim 75 should likewise be allowable, and allowance is respectfully requested.

Since Claims 76 to 80 are dependent directly or indirectly on Claim 75, it is respectfully submitted that once the Examiner is satisfied of the allowability of Claim 75, the remaining Claims 76 to 80 should likewise be allowable, and allowance is respectfully requested.

In view of the foregoing amendments and arguments it is submitted that claims 61-80 inclusive are in full compliance with the requirements of 35 U.S.C. § 112, first paragraph and are not anticipated by or obvious in view of the teachings of Paoli. Therefore it is respectfully requested that these claims be allowed and the application passed to issue forthwith.


If for any reason the Examiner is unable to allow the application on the next Office Action and feels that an interview would be helpful to resolve any remaining issue, the Examiner is respectfully requested to contact the undersigned attorney for the purpose of arranging such an interview.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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The Federal Government was closed on
Thursday, September 18, 2003 and
Friday, September 19, 2003, therefore all
respective submissions are being timely
filed on Monday, September 22, 2003

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